

changing the display of the object image in accordance with the recognized, simulated manipulation of the object and object information for the displayed object image, including data relative to a type of the displayed object.

12. (NEW) A method according to claim 11, wherein:

in response to detected characteristics indicating that two touching contacts are located at opposite sides of the object image and move and stop with a distance therebetween, controlling the display of the object image on the display device so that the object moves on a display surface of the display device from where the two touching contacts are located at opposite sides of the object image to where the two touching contacts stop with the distance therebetween.

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13. (NEW) A method according to claim 11, wherein:

in response to the detected characteristics indicating that the touching contact position is located at the object and moves while keeping in contact with the object and the object is sufficiently large relative to, and extends beyond, the display or only a portion of the object image is displayed on the display device, controlling the display of the object by scrolling the object image while displaying same.

14. (NEW) A method according to claim 13, wherein:

in response to the detected characteristics indicating that a moving, touching contact stops moving, controlling the display of the object image on the display device so that the scrolling of the object image stops on the display.

15. (NEW) A method as recited in claim 11, further comprising storing information specifying a position of a portion of the object image being displayed on the display device, relative to the whole object image.

16. (NEW) A method according to claim 11, wherein:

in response to the detected characteristics indicating that the touching contact is located at a geometric center or at a center of gravity of the object and moves and stops while maintaining contact with the object, controlling the display of the object image so that the object image moves from where the touching contact is located at the geometric center or the center of gravity to where the moving, touching contact stops moving.

17. (NEW) A method according to claim 11, wherein:

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in response to the detected characteristics indicating that the touching contact is located at a position off a geometric center or off a center of gravity of the object and moves and stops while maintaining contact with the object, controlling the display of the object image so that the object image moves while rotating, from a position where the touching contact begins to a position where the touching contact stops.

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18. (NEW) A method according to claim 11, wherein:

in response to the detected characteristics indicating that the touching contact touches the object coming in a direction toward the object, from a position apart therefrom and at a speed higher than a predetermined speed, controlling the display of the object so that the object image moves a distance in the direction and at a speed proportional to the speed with which the touching contact touches the object.

19. (NEW) A method according to claim 11, further comprising:

in response to the object information specifying the displayed object to be of a rollable type, displaying the object image in a rolling condition.

20. (NEW) A method according to claim 19, further comprising:

in response to the detected characteristics indicating that the touching contact touches the object image, moving and stopping while maintaining contact with the object, displaying the object image in a rolling condition.

21. (NEW) A method according to claim 19, further comprising:

in response to the detected characteristics indicating that the touching contact moves on the object while maintaining said touching contact with the object, displaying the object image in a rolling condition and changing a positional relationship between the object image and the touching contact on the object image in accordance with the movement of the touching contact on the object.

22. (NEW) A method according to claim 19, further comprising:

displaying the object image in a rolling condition so as to move the object image in a direction of the movement of the touching contact on the object.

23. (NEW) A method according to claim 11, further comprising:

displaying the object image in a state of distortion and/or restoration, according to the object information specifying the displayed object to be of an elastic type.

24. (NEW) A method according to claim 11, further comprising:

sensing an amount of pressure applied to the object image and, when the detected characteristic of the touching contact exceeds a specific amount of pressure, displaying the object image in a degree of distortion and/or restoration according to the amount of, and changes in, pressure of the touching contact.

25. (NEW) An image display and manipulating method, comprising:  
displaying an image of an object;  
sensing touching contact relative to the displayed object image and outputting  
corresponding touch information;  
detecting, from the received touch information, characteristics of the touching contact, the  
characteristics including the position on the object image of the input touching contact and  
changes of the position of the input touching contact; and  
changing the display of the object images in accordance with the characteristics and object  
information including an object type, which specifies physical properties of the object.

26. (NEW) A method according to claim 25, further comprising detecting changes of  
the position of the input touching contact.

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27. (NEW) A method of manipulating a displayed image of an object, comprising:  
displaying an image of the object;  
detecting a position of touching contact relative to the object image and changes of the  
touching contact; and  
changing the display of the object image in accordance with the detected characteristics  
and object information including at least an object type which specifies physical properties of the  
object and position information which specifies a position of the displayed object image.

28. (NEW) A method according to claim 27, further comprising detecting changes of  
the touching contact.

29. (NEW) A method of manipulating a displayed image of an object, comprising:  
sensing characteristics of a touching contact relative to the displayed image of the object,  
the characteristics including at least a position of the touching contact and changes therein, and

outputting corresponding touch information representing a simulated movement of the object responsive to the characteristics of the touching contact; and

recognizing a type of manipulation of the object image in accordance with the information representing a simulated movement of the object and an object type specifying physical properties of the object and, correspondingly, manipulating and displaying the object image.

30. (NEW) A method according to claim 29, further comprising sensing changes in the position of the touching contact.

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cr 31. (NEW) A method as recited in claim 30, further comprising storing information specifying a position of a portion of the object being displayed, relative to the whole object.

32. (NEW) A display method comprising:  
producing a display of an image of an object;  
sensing touching contact relative to the displayed object image, simulating an actual touching contact with an actual object corresponding to the displayed image of the object;  
detecting characteristics of the touching contact including a position of the touching contact relatively to the object image and changes of the position of the touching contact; and  
changing the display of the object in accordance with the object information and the detected characteristics.

33. (NEW) A method according to claim 32, further comprising detecting changes of the position of the touching contact.

34. (NEW) A computer readable medium storing therein a computer program affording simulated manipulation of an object in accordance with an image of the object displayed on a display surface of a display device, said computer program comprising:

a first function of responding to sensed touching contact relative to the displayed image of the object, simulating a manipulation of the object, and to changes in the touching contact for producing and outputting corresponding touch information;

a second function of detecting, from the output touch information, characteristics of said touching contact including the selected location on the object image of the touching contact and changes of the touching contact and recognizing therefrom the corresponding object manipulation simulated thereby; and

a third function of changing the display of the object image in accordance with the detected characteristics of the touching contact, the recognized, simulated manipulation of the object and object information for the displayed object image including data relative to a type of the displayed object.

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35. (NEW) A computer readable medium according to claim 34, wherein, in response to said second function detecting characteristics indicating that two touching contacts are located at opposite sides of the object image and, further, move and stop with a distance therebetween, said third function changes the display of the object image so that the object moves on a display surface of the display device from where the two touching contacts are located at opposite sides of the object image to where the two touching contacts stop with the distance therebetween.

36. (NEW) A computer program product for controlling a computer, the program product comprising:

a recording medium readable by the computer;

means responsive to touching contact, and to changes in the touching contact, relative to an object displayed on a display surface of a display device, simulating manipulation of the object, for producing and outputting touch information corresponding to the sensed touching contact and representing the simulated manipulation of the object;

first subroutine means, responsive to the output touch information, for detecting the characteristics of the touching contact and recognizing therefrom the corresponding object manipulation simulated thereby; and

second subroutine means for changing the display of the object image in accordance with the detected characteristics of the touching contact, the recognized, simulated manipulation of the object and object information for the displayed object image including data relative to a type of the displayed object image.

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37. (NEW) An apparatus affording simulated manipulation of an object in accordance with an image of the object display surface of a displayed on a display device, comprising:

a display device displaying an image of an object;

an input device responsive to a touching contact relative to the displayed object image, the touching contact simulating a manipulation of the object, and outputting corresponding touch information;

a storage unit storing a plurality of object information, each object information specifying a responsive manipulation type of each object; and

a display controller changing the display of the object image in accordance with the touch information and the stored object information specifying a manipulation type of the object.

38. (NEW) An apparatus according to claim 37, wherein:

said storage unit stores an object information specifying that the manipulation type is "rollable"; and

in response to the touch information and said object information, said display controller displays the object image in a rolling condition.

39. (NEW) An apparatus according to claim 37, wherein:

said storage unit stores an object information specifying a manipulation type of "elastic";  
and

in response to the touch information and said object information, the display controller displays the object image in a distortion and/or restoration condition.

40. (NEW) A method for simulating manipulation of an object using a displayed image of the object, comprising:

displaying an image of an object;

responding to a touching contact relative to the displayed object image, the touching contact simulating a manipulation of the object, and outputting corresponding touch information;  
and

changing the display of the object image in accordance with the touch information and at least one of plural object information, each object information specifying a responsive manipulation type of the object.

41. (NEW) A method according to claim 40, wherein:

said one of plural object information specifies that the manipulation type is "rollable"; and  
comprises

in response to the touch information and said object information, displaying the object image in a rolling condition.

42. (NEW) A method according to claim 40, wherein said one of plural object information specifies that the manipulation type is elastic, further comprising:

in response to the touch information and said object information, displaying the object image respectively in a distorted or a restored condition.



43. (NEW) A storage medium storing a process displaying an image of an object by sensing touching contact relative to the displayed object image and outputting corresponding touch information; detecting, from the received touch information, characteristics of the touching contact, the characteristics including the position on the object image of the input touching contact and any changes of the position of the input touching contact; and changing the display of the object image in accordance with the characteristics and an object information including an object type, which specifies physical properties of the object.

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44. (NEW) A storage medium storing a process displaying an image of the object by detecting a position of touching contact relative to the object image and any changes of the touching contact and changing the display of the object image in accordance with the detected characteristics and object information including at least an object type which specifies physical properties of the object and position information which specifies a position of the displayed object image.

45. (NEW) A storage medium storing a process displaying an image of an object by sensing characteristics of a touching contact relative to the displayed image of the object, the characteristics including at least a position of the touching contact and any changes therein, and outputting corresponding touch information representing a simulated movement of the object responsive to the characteristics of the touching contact; and recognizing a type of manipulation of the object image in accordance with the information representing a simulated movement of the object and an object type specifying physical properties of the object and, correspondingly, manipulating and displaying the object image.

46. (NEW) A storage medium as recited in claim 45, storing information specifying a position of a portion of the object being displayed, relative to the whole object.

47. (NEW) A storage medium producing a display of an image of an object by sensing touching contact relative to the displayed object image, simulating an actual touching contact with an actual object corresponding to the displayed image of the object; detecting characteristics of the touching contact including a position of the touching contact relatively to the object image and any changes of the position of the touching contact; and changing the display of the object in accordance with the object information and the detected characteristics.

48. (NEW) A computer readable medium storing therein a computer program affording simulated manipulation of an object using a displayed image of the object, said computer program comprising:

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a first function of responding to a touching contact relative to the displayed object image, the touching contact simulating a manipulation of the object, and outputting corresponding touch information; and

a second function of changing the display of the object image in accordance with the touch information and at least one of plural object information, each said object information specifying a responsive manipulation type of the corresponding object.

49. (NEW) A storage medium storing a process simulating a manipulation of an object in response to interaction with a displayed image of the object.

50. (NEW) A storage medium as claimed in claim 49, wherein the process responds to the interaction of touching contact on a touch screen adjacent the displayed image.

51. (NEW) A storage medium as claimed in claim 50, wherein the interaction constitutes manual contact on the touch screen adjacent the displayed image.